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ORIGINAL ARTICLES.

A MORGAGNIAN CATARACT IN AN EYE SUFFERING FROM SECONDARY GLAUCOMA.

By Adolf Alt, M.D.
ST. LOUIS, MO.

The eyeball which is the subject of this report was kindly given to me by Dr. J. G. Calhoun, who had enucleated it on May 9th, 1912. The following short history accompanied the specimen:

"J. J., age 72. Left eye: aphakic, with a large scar in the nasal quadrant of the cornea from an injury caused by a piece of iron 30 years ago. Right eye: vision has for years been gradually growing worse and is now reduced to perception of light. About a year ago this eye began to have attacks of pain. These pains recurred at varying intervals and at times spread over the entire side of the head and down into the neck, and even the shoulder. Lately the pains were seldom absent more than a few days. Shortly after the pain began, about a year ago, this eye began to turn in toward the nose and has so remained. Convergence of about 30 degrees. T+2. Enucleation."

When I received the eyeball it was in a formol solution. There was a well marked arcus senilis and a comparatively deep furrow nearly encircling the whole of the periphery of the cornea (Fuchs' Furchen-Keratitis). The anterior chamber seemed normal in depth.

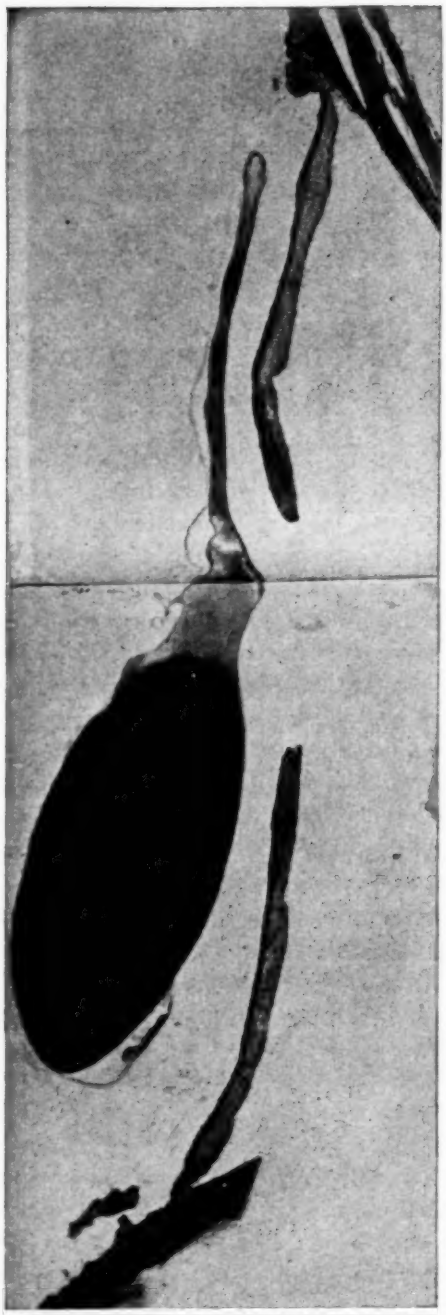

FIG. 1.

When the eye was cut in two æquatorially, a large old patch of choroidoretinitis was found near and inward from the optic papilla, as also a number of smaller patches in the region of the ora serrata. The optic disc was slightly cupped.

The lens presented a beautiful characteristic specimen of Morgagnian cataract. While it was in general fairly transparent, the perfectly opaque nucleus was seen lying in the lower part of the lens capsule. The shape of the lens as a whole was at that time but little altered, if any.

In one part in the lower half of the pupil there was a posterior synechia which, however, broke very easily.

Since Morgagnian cataracts have but rarely been examined histologically, and mostly after extraction, this specimen seemed to me to be of especial interest. While in Becker's Atlas of the lens in health and disease much is to be found about the changes in the capsular epithelium in hypermature cataracts, there is no illustration showing a well developed Morgagnian cataract. The only illustration of such a case I could find is by Treacher Collins in "Parsons' Pathology of the Eye" (Figure 277).

Being, therefore especially anxious to get good sections of this Morgagnian cataract, I took great pains to harden the eye slowly and carefully. During this process, however, most of the fluid contents of the lens capsule disappeared, so that on section the conditions were as shown in Figure 1.

The upper half of the lens capsule was now nearly empty so that the anterior and posterior capsule were separated only by a small quantity of a grumous substance which stained uniformly red with hæmatoxylin-eosin. In the lower half the nucleus was firmly held between the anterior and posterior capsule without any intervening remnant of the formerly fluid contents.

Former observers of Morgagnian cataracts have found the capsular epithelium wholly intact and in normal condition; others have found it considerably altered, or partly or wholly wanting.

In my case the different sections show no uniformity. In some sections long stretches of the anterior capsular epithelium appear perfectly normal (Figure 2); in some there are even some lens fibres still attached to them. In other sections only a smaller number of the epithelial cells are normal, and these are separated by smaller and larger clusters of hydropical cells (Becker's vesicular cells). In some sections parts of the anterior capsule are bare of epithelium; in these a large deposit of amorphous lime is attached to the anterior capsule. This

shows that all sorts of conditions are present according to the site of the sections. The posterior capsule, also, is lined with an irregular and patchy layer of abnormal epithelial cells, which, too, here and there have formed smaller accumulations of hydropic cells. The contents of the upper half of the capsule, aside from these cellular elements, form a grumous material in which no remnants of lens fibres or cells are recognizable. Near the centre of the lens capsule the epithelial lining disappears and in the lower half which encloses the nucleus absolutely no epithelial or other cells can be found. Perhaps, the continued moving around of the hard nucleus helped in their destruction by merely mechanical means.

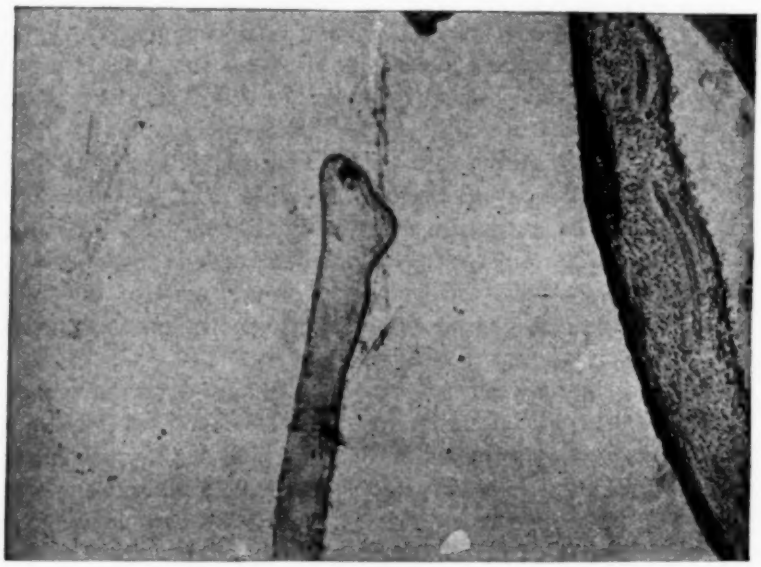

FIG. 2.

The nucleus itself appears almost perfectly uniform, barely showing an arrangement of concentric layers in some of the sections. In about half a dozen of the sections small clusters of crystals are seen. They have taken on no stain and appear as needles arranged around a central point. They most nearly resemble needles of tyrosin. From the very small amount of semi-solid material which after the hardening process of this eye had been completed was left within the lens capsule, it is easily seen that this lens did in life not appear milky, although this has sometimes been stated as characteristic for a Morgagnian cataract.

The meagre history of the case does not give us any idea of how long the cataract had been in existence, nor when the stage of hypermaturity was reached and when the nucleus sank to the bottom of the lens capsule. Neither does it allow us to judge of the actual time of the beginning of the glaucoma and of what has gone before.

Yet, I believe that the glaucoma was a secondary one from the histological conditions, especially those found in the ciliary body and iris.

The ciliary body is greatly atrophied in all sections. Its epithelial layers are very materially altered (See Figures 3 and 4).

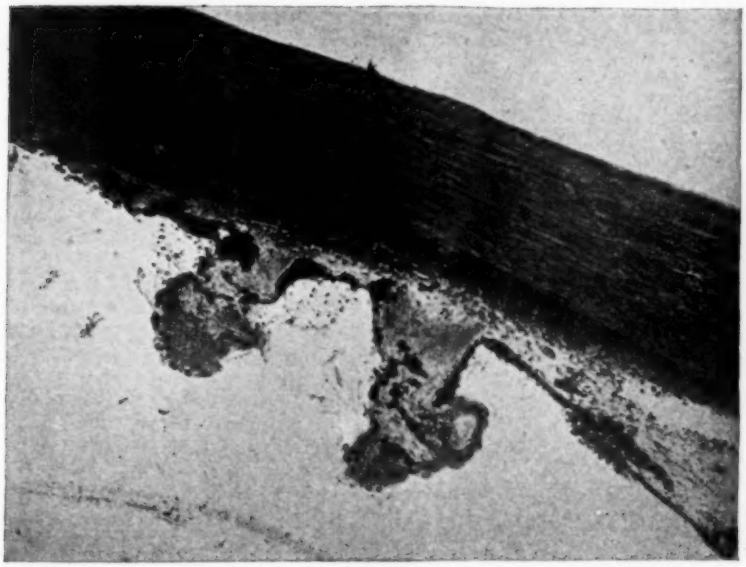

FIG. 3.

In parts the uveal layer is deeply pigmented; in parts there is no pigment whatever. Large round cells containing fuscin needles lies free on the inner surface of the ciliary body, along the fibre bundles of the zonule of Zinn and in the anterior part of the vitreous body. These cells appear to be epithelial cells shed from the ciliary body, which though atrophied still shows considerable round cell infiltration.

The same cells can be traced over the whole surface of the iris. They, also, fill the iris angle and are so closely packed in the meshes of the ligamentum pectinatum, that this appears as a darkly pigmented tissue. The iris angle is obliterated only in a

part of the lower periphery; in all other parts it is open. The glaucoma then was not due to the adhesion of the iris periphery

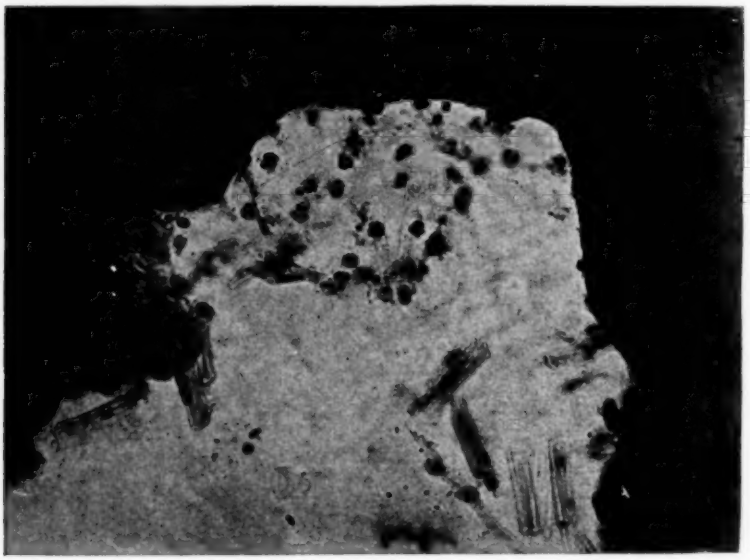

FIG. 4.

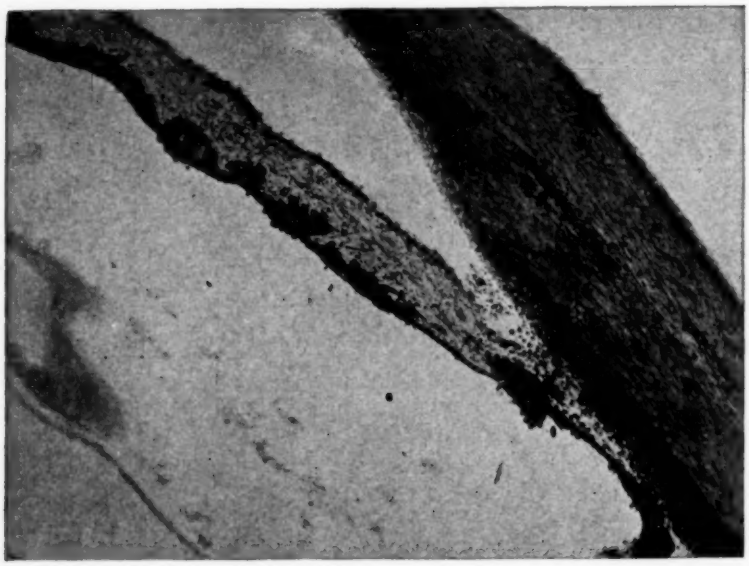

FIG. 5.

to the inner surface of the cornea as we usually find it in these cases, but to the absolute choking up of the filtering spaces in

the ligamentum pectinatum with the shed pigment epithelium cells and perhaps some leucocytes.

The iris, which in general shows a moderate but distinct round cell infiltration, presents besides in the periphery of its upper half a very interesting change affecting its retinal layers (See Figure 5). Here the pigmented layer instead of forming a more or less uniform structure is very much broken up. In parts the pigmented cells are almost altogether atrophied, so that this layer is reduced to a thin dark line; in others there seems to have taken place a considerable new formation of pigmented cells. These have assumed a round-shape and, having penetrated through the dilator muscle, they have entered the tissue of the iris in large quantities.

From these conditions found in the ciliary body, iris and ligamentum pectinatum, it seems that aside from the atrophic chorioretinitis this eye originally suffered, also, from a chronic iridocyclitis, in the course of which the epithelial cells were shed and being washed into the filtration angle have blocked its passages. Thus the glaucoma resulted.

The excavation in the papilla is marked but not deep. The optic nerve as far as it was removed with the eyeball shows a quite dense round cell infiltration.

The atrophic chorioretinitic patches show nothing of especial interest, both retina and choroid being simply replaced by a dense connective tissue.

ORBITAL DISEASES SECONDARY TO SINUSITIS.

Wendell Reber (*Penn. Med. Jour.*, June, 1912) summarizes his interesting article on this subject as follows:

"All manner of extra- and intraocular diseases are to-day traceable to suppurative and non-suppurative diseases of the accessory sinuses. Ofttimes it will require the most prolonged study on the part of the rhinologist to finally establish the relation. Even in the presence of seemingly negative findings intranasal treatment that will deplete the mucosa to the fullest extent should be instituted. In ocular conditions of seemingly obscure origin, no case can be said to have been properly studied until the accessory sinuses have been shown to be plainly non-causative."

TRANSLATIONS.

THE USE OF CALCIUM SALTS IN THE INTERNAL TREATMENT OF GLAUCOMA.*

By D. L. Weekers.

Translated by Adolf Alt, M.D.

The different internal medications which in turn have been advocated against glaucoma, the iodides, the lithium salts, salicylic acid, etc., have been in general abandoned, because the theoretic deductions which had inspired them were not upheld by the clinical observations.

In the absence of any internal medication possessing a demonstrated good effect, I have for more than a year prescribed in cases of glaucoma a remedy which, as far as I know, has not yet been used in glaucoma and the employment of which seems justified to me, based on theoretical experimental and clinical reasons. I speak of calcium salts and especially of calcium chloride.

Ordinarily we try to overcome the glaucomatous hypertension by aiding the excretion of the intraocular fluids (miotics, sclerotomy, etc.). Could it not be possible on the other hand to reduce the formation of the intraocular fluids, and especially of the aqueous humor? This was the question I put to myself.

In recent experiments Chiari and Januschke[1] have shown from a general standpoint that the calcium salts have a retarding influence on the processes of transudation and exudation, especially in the serous and mucous membranes. I shall here refer only to their experiments regarding the conjunctiva.

The very vigorously reacting sensibility of the ocular conjunctiva to certain irritating substances is well known; these (essence of mustard, abrin, etc.) produce rapidly a violent œdema of the conjunctiva. By the administration of calcium salts this transudation can be obviated.

(1.) Action of essence of mustard on the conjunctiva.

Rabbit weighing 1,700 grammes.

6:6. Instillation of one drop of essence of mustard into the right eye. Blepharospasmus, redness and conjunctival irritation.

*La clinique ophtalmologique, June, 1912.

6:20. Very great swelling of the whole bulbar and palpebral conjunctiva. The cornea is covered by the folds of the œdematous conjunctiva.

6:30. The lids are swollen to their utmost. This condition lasts for hours. Even after 24 hours no improvement can be noticed.

(2.) Calcium chloride obviates the action of the essence of mustard.

Rabbit weighing 1,500 grammes.

March 2d. From noon to 2:45 P.M. 4 cc. of a 5 per cent. solution of Ca Cl^2 (0.2 grammes) have been injected under the skin.

4:14. One drop of essence of mustard is instilled into the left eye. Blepharospasmus, redness and conjunctival irritation.

4:23. Subcutaneous injection of 2 cc. of the 5 per cent. Ca Cl^2 solution.

4:44. No noticeable reaction.

4:50. Slight chemosis of the conjunctiva of the lower lid.

5 o'clock. The chemosis is still limited to the lower lid.

6:45 P.M. Status idem. 4 cc. of Ca Cl^2.

March 3d, 9:30 A.M. The œdema has disappeared.

10:00. 4 cc. of Ca Cl^2.

10:40. Instillation of 2 drops of essence of mustard into the right eye.

11:50. Slight signs of a fugaceous œdema.

(3.) Action of abrin on the conjunctiva.

Rabbit weighing 1,800 grammes.

Instillation of a drop of a 1 per cent. solution of abrin into the right eye at 1 o'clock P.M., 1:05 and 1:10.

6:00 P.M. The eye is normal.

The next morning violent œdema and swelling of the conjunctiva of the right eye, which lasts for several hours.

(4.) Calcium chloride retards the action of abrin.

Rabbit weighing 1,400 grammes.

Between 5 and 7 o'clock P.M. 4 cc. of a 5 per cent. Ca Cl^2 solution were subcutaneously injected.

At 7:00, 7:05 and 7:10 one drop of a 1 per cent. abrin solution was instilled into the right eye.

Next morning a slight redness of the conjunctiva was observed, but no œdema.

These experiments prove the manifest inhibitory effect of the calcium salts on the transudation in the conjunctiva.

The experiments concerning the pleural transudations are no less convincing. Certain substances (sodium iodide, thiosinamin, diphtheria toxin, etc.) produce in animals aside from other symptoms, an abundant pleural effusion which is often accompanied by pulmonary œdema and hydropericardium. If one injects a solution of calcium chloride into dogs which have been intoxicated with sodium iodide or any other of the substances named, at the autopsy a complete absence of any pleural effusion is observed, while in the control animals it is well marked.

I shall later on come back to the mode of action of the calcium salts on transudations and exudations.

On account of this manifest inhibitory influence of the calcium salts on transudations, and on the other hand on account of the total absence of any internal medication against glaucoma which to many observers is clearly due to the exaggeration of the vascular transudations into the eye, I asked myself if we might not find in the calcium salts an active agent, or at least an adjuvant, in the treatment of glaucomatous hypertension.

Clearly it is not possible to think of using this medicament to the exclusion of the usual treatment (miotics, etc.). It is, therefore, difficult to form an opinion of the part played by this new therapeutic agent in the improvement and the cure of glaucoma.

However, in a number of cases, especially in the following ones, the calcium chloride has seemed to me to act very favorably.[2]

Case I.—H. L., 54 years old, has lost the left eye by a trauma when 8 years old. She came to consult me on account of the right eye. During more than a year vision in this right eye has from time to time been disturbed in attacks which, however, passed off again.

Two weeks ago, an acute and painful attack came on which forced the patient to go to bed in the hope that it would pass off like the former ones. Slight improvement the following morning, but vision remained disturbed.

Two weeks later she decided to see a physician.

R. E. Typical inflammatory glaucoma; ciliary injection, cornea opalescent, pupil dilated, oval and rigid, opaque media, nasal reduction of the visual field. T+2. Periorbital pain. V=fingers at 4 meters.

L. E. Atrophic; no light perception.

General health satisfactory. Moderate arteriosclerosis.

Medication: Instillations of 1 per cent. solution of pilocarpin every hour, hot compresses; foot baths.

Three days later slight improvement. Vision has risen to 5/60 but the eye is injected and hard, and the media, especially the cornea, remain dim. The patient absolutely refuses an iridectomy.

Pilocarpin instillations five times a day.

After three weeks' treatment the condition remains stationary. The eye is still injected, the cornea without lustre, the pupil is a little smaller but still dilated; with the ophthalmoscope the details of the fundus can hardly be recognized. The hypertension and the periorbital pain persist, as also the constriction of the visual field. Vision varies from 4/60 to 5/60. The patient refuses any operative measure.

Now I prescribed internally 3 grammes of calcium chloride per day, while the local treatment was kept up as before.

From this time the hypertension and the glaucomatous symptoms improved rapidly and continuously. A glaucomatous excavation could be seen with the ophthalmoscope. Although a constriction of the nasal side of the visual field persists it is smaller. Tn. V=5/12.

In six months no relapse has taken place. Of course, the miotic treatment is continued; furthermore, every two months for ten days the patient takes 3 grammes of calcium chloride.

Case II.—M. L., 64 years old, has absolute glaucoma in the right eye and chronic non-inflammatory glaucoma in the left.

The following history was furnished at the first visit: A year and a half ago vision in the right eye became poor and this was the only symptom. There was never any pain or injection of the eye. At that time a colleague performed an iridectomy. There is now absolutely no vision in this eye. The patient came to consult me about the left eye which has been diseased for about one year and a half. At her physician's advice she has already instilled pilocarpin; yet, in spite of this medication, vision has continually decreased and she is afraid of total blindness.

R. E. Absolute glaucoma. T+1. Glaucomatous excavation. No symptoms of irritation.

L. E. Globe not injected. The media are transparent. Glaucomatous excavation as deep as in the R. E. T+1. Restriction of the nasal field very pronounced. Compound myopic astigmatism. V=5/10.

Myocarditis, general arteriosclerosis.

The patient has so bad a recollection of the operation made on the R. E. that I find it inopportune to propose sclerectomy for the L. E. Local medication (miotics) and general (iodides). Four months later the state of the eye is almost the same as before, except that the visual field is still more restricted and that V. has fallen to 5/60.

At this time I prescribed calcium chloride 3 grammes a day.

After 6 weeks vision had returned to 5/24 and has remained so for 9 months. The visual field does not change any more. The hypertension of both eyes is favorably influenced. From time to time the patient still takes calcium chloride.

These observations are evidently insufficient in themselves in order to establish the efficacy of the calcium salts against the glaucomatous hypertension. Yet, they encourage us to continue their use.

MODE OF ACTION OF THE CALCIUM SALTS.

A. E. Wright[3] had previously shown that the calcium salts increase the viscosity and coagulability of the blood. According to this author certain forms of urticaria, following the injection of antitetanic or antidiphtheritic serum, are due to the impoverishment of the blood of calcium and its diminished coagulability. The administration of calcium is the best remedy to cure this urticaria. Moreover, Wright has shown that calcium chloride prevents the local cutaneous œdema, which is usually observed after the injection of virulent typhus cultures in horses or of dead cultures in man.

Aside from this influence of the calcium salts on the viscosity of the blood, Chiari and Januschke have pointed out as another fact that the calcium salts exert an influence on the permeability of the bloodvessels, their walls becoming more permeable when calcium is withdrawn and less permeable when calcium is given.

Herbst[4] had already demonstrated that the intercellular substance in certain tissues is altered by the impoverishment in calcium and that the intercellular spaces become enlarged. On the contrary, the addition of calcium strengthens the intercellular substance and closes up the intercellular spaces. The permeability of the vascular walls is intimately related to the richness in calcium.

Chiari estimates that the flow of liquid produced in the intestines by certain substances (sulfate, tartrate, oxalate of sodium)

is in a large measure due to the property of these substances of fixing and withdrawing the calcium and of thus indirectly increasing the permeability of the intestinal bloodvessels and to activate the glandular secretion.

R. Koch[5] has described an analogous influence on the salivary glands.

It would be interesting to see by manometric experiments on animals whether the injection of calcium chloride would produce a diminuation in the secretion of aqueous humor.

Concerning the rapidity of action, Chiari and Januschke have shown that the calcium derivates do not begin their effect until two or three hours after the injection and that it lasts about 24 hours.

The different calcium salts are not equally active; the chloride stands first, then comes the lactate, the acetate and finally the glycero-phosphate.

The action of the calcium derivates on the processes of exudation and transudation is a specific one. When the same experiments are made with the corresponding salts of strontium (the metal nearest to calcium), the results are absolutely negative.

NOTES.

1. Hemmung von Transsudat—und Exsudatbildung durch Calciumsalze (Arch. f. experim. Path. and Pharmac., Vol. 65, p. 120).
2. I prescribe 3 grammes of calcium chloride per day (Ca Cl^2) 9 grammes, simple syrup 25 grammes, aqua 120 grammes, one soup spoonful 3 times a day. Must be renewed after 3 days because it disintegrates rapidly.
3. Lancet, Sept 19, 1896, p. 807; Lancet, January 18, 1896, p. 153.
4. Arch. f. Entwickelungsmechanik, IX. p. 424.
5. Schmiedeberg's Arch., Vol. XIV., p. 14, p. 153.

ORBITAL CELLULITIS FROM CAUSES OTHER THAN SINUSITIS.

Edward B. Heckel (*Penn. Med. Jour.*, June, 1912) says that orbital cellulitis other than that caused by sinusitis may result from (a) trauma, (b) carious teeth, (c) abscess of teeth, (d) osteomyelitis, (e) facial erysipelas, (f) meningitis, (g) brain abscess, (h) exanthemata, and continued fevers, (i) metastasis, and (j) actinomycosis. In orbital cellulitis from these causes the bacteriology differs as a rule from that in those cases caused by sinus disease where the pneumococci are most frequently found.

MEDICAL SOCIETIES

OPHTHALMIC SECTION,
ST. LOUIS MEDICAL SOCIETY.

April 3, 1912.

Dr. John Green, Jr., in the Chair.

Absorption of Contusion Cataract without any Apparent Rupture of the Capsule.—By Dr. E. H. Higbee, Jr.

Wayne McC., age 10. Was struck in the left eye with an arrow that had a blunt lead point. He was about fifty feet distant from the boy that shot the arrow. The accident occurred on November 19th, 1911. Examination showed that there had been some hæmorrhage into the iris; anterior chamber deep. Tension, 2. The lens was cloudy, making it impossible to see the fundus. At no point could there be seen any rent in the capsule, although the pupil was well dilated with atropin; light perception and projection were good.

The eye has been treated antiseptically and a drop of atropin put into it each day at the office, while atropin solution has been used at home sufficiently to keep up almost complete dilatation. No other medicine has been used.

Absorption began to take place gradually from below, and the lower fourth of the lens is now practically gone, and there are some disintegrated masses lying within the capsule. The diminished thickness of the present lens shows that a great deal of absorption has already taken place.

Like many cases of traumatic cataract, the lens in this case became entirely opaque, going into the fourth stage of progressive cataract development in two days. In this stage the lens is changed into a pultaceous substance and begins to disintegrate. Fuchs says: "If there is a gradual loss of water in a hypermature lens, the pultaceous mass dries up along with the nucleus of the lens into a cake-like mass; but if the loss of water ceases after the lens becomes entirely opaque, the lenticular mass grows more fluid in proportion as it keeps on breaking up into smaller parts. If the process continues in a young person, in whom there is no hard nucleus in the lens, the latter becomes liquified

through and through so that the lens consists of a milky fluid."

A lens that has thus become liquified does not remain unaltered, for a gradual loss of water takes place and the disintegrated lens masses are absorbed. Inspissation thus reduces the volume of the lens until, in cases where no nucleus has been present, the entire mass disappears, transformed into a thin transparent membrane.

It is hard to distinguish, in this case, whether it is a cataractous membrane or simply the capsule that lies in the clear space below the lens. Whichever it is, the probability is that later there will be thickened capsular remains, as the anterior and posterior sides will collapse and eventually lie against each other. This, no doubt, will produce some thickening which will have a tendency to become opaque.

DISCUSSION.

Dr. Jennings: I remember about seven years ago, I saw a small boy who was struck in the eye with a snowball. There was quite a distinct opacity in the anterior portion of the lens. The pupil was somewhat dilated as a result of the injury and I put a drop of eserin in the eye to see what effect it would have on the pupil. The next day the opacity had entirely disappeared.

Dr. Ewing: I think I have never seen just this kind of a case in actual practice, but I reported here a year or two ago an instance in which absorption had absolutely taken place in a female between 60 and 70 years of age, apparently without any injury or cause, whatever. At the time, I looked up the literature on the subject very carefully, but found only a few cases had been reported and these were mentioned in Norris and Oliver, "System of Diseases of the Eye."

Dr. Higbee, in closing: I have investigated the literature and have written physicians, and asked several physicians here in St. Louis, and none has reported or ever seen just such a case. As yet, the lens is not entirely absorbed, but those who have seen the case will say that absorption is surely taking place. Over half the lens is absorbed now. Whether this is really as unusual as I think it is, I am not in a position to say. I will write Dr. Jackson, of Denver, to ask if he can give me any light on a case of this kind. It will be interesting to follow the case up and this we can do because the boy can be seen at any time, and as the lens gradually absorbs I will present the patient again before the Section.

Gun Shot Wound of Orbit Causing Blindness of Left Eye and Complete Temporary Paralysis of Motor Oculi.—By Dr. J. Ellis Jennings.

December 4th, 1910, M. H., aged 20, was referred to me by Dr. T. L. Hutton, of Willow Hill, Ill., with the following history: On Thanksgiving Day the patient, with a neighbor, went out hunting and they became separated in beating through the brush. While out of sight of each other the patient received a charge of bird shot in the face.

Examination: The face is seen to be thoroughly peppered with shot—some thirty-five to forty can be counted on the forehead, cheeks, nose and jaws. The right eye escaped injury and its vision is normal. The left eye was not so fortunate. There is complete ptosis of the upper lid and just above the inner canthus is a wound showing the entrance of a shot. On lifting the upper lid the eyeball is seen to be turned outward and cannot be moved upwards, downwards or inwards. The pupil is dilated to six mm., and does not react to light, to convergence or consensually. In other words, there is complete paralysis of the motor oculi. Vision of the left eye=no light perception. Ophthalmoscopic examination failed to show the presence of a foreign body. The vitreous was slightly hazy and three or four small clots of blood were seen in the upper and inner quadrant. The optic nerve was normal.

On March 10th, 1911 (three months later), a second examination showed disappearance of the ptosis and paralysis of the motor oculi. There was no light perception. The optic nerve was now distinctly atrophic with enlarged veins and somewhat contracted arteries. In the lower nasal quadrant is a heavy line of hæmorrhage with atrophy of the choroid and pigment heapings along its borders. The shot that did the damage was seen in the X-ray photograph to be situated 3½ inches behind the cornea. The shot evidently ranged along the nasal wall of the orbit, cutting the optic nerve as it passed the optic foramen, then through the sphenoidal fissure, wounding the third nerve and finally becoming lodged in the brain, an inch behind the chiasm.

DISCUSSION.

Dr. Ewing: Was there any general eye disturbance?

Dr. Green: With reference to transitory ocular paralysis following gun shot wounds I had a very interesting experience

about two years ago. A young man, 25 years of age, came to see me December 5th, 1910. On November 12th he was shot from a distance of about thirty feet, the shot being No. 8 drop shot (soft lead). About 160 shot entered the face, shoulder and arm. He was stunned for the moment, but soon staggered up and was able to make his way to his house, half a mile away. He made a rapid recovery from the injury; a great many of the shot were removed and a great many were left. At first he thought his right eye had been shot out, but after a moment he found the vision as clear as ever. The next day he was alarmed to discover that everything appeared double.

Examination: December 5th, 1910. There were numerous scars in the face, shoulder and neck where the shot had entered. The eyes looked alike, no injury to the right. Vision 5/5, either eye; ophthalmoscope, fundus normal R. and L. There was no apparent limitation of motion but on applying the red glass test I made out a vertical and homonymous diplopia with apparent increase as the patient looked up and to the left. After observing the case for a few days and finding that there was no diminution in the degree of the diplopia, I still could not be sure whether the separation of the images was greater up and to the right or up and to the left, so that I was unable to say whether the muscle primarily involved was the right superior rectus or inferior oblique. An X-ray made by Dr. Hall showed four distinct foreign bodies, two within the nasal cavity. One shot was on a level with the horizontal meridian of the cornea and back as far as the optic nerve entrance, and the fourth was just above and a little to the nasal side of the globe.

I was able to give perfect relief from the diplopia by placing before the right eye a 12 degree prism, base 62½ degrees up and out. I was greatly aided in securing the exact position of the prism by locating the images on the Cogan prism chart.

One month later, the patient reported by letter: "When I have my glasses on I see well, but when they are off the double vision is there just as bad as ever."

On February 9th, I received the following letter from the patient: "I am glad to be able to report to you that my eyes are all right. They began to get better the 13th of last month. In five days I could not see at all with my glasses on, so I laid them away and my eyes have been all right since then."

I was much interested in this remarkable recovery. His letter in reply was as follows: "I have no double vision now.

Looking straight ahead on to the right or left I see as well as I ever did. My sight is as good and strong as it was before the shooting."

I have not heard from the patient since so I imagine there has been no return of the diplopia.

Dr. Jennings, in closing: In reply to Dr. Ewing's question, there were no symptoms other than the blindness.

Bird Shot in Right Eyeball for Nineteen Years Without Causing Sympathetic Ophthalmitis.—By Dr. J. Ellis Jennings.

S. W., age 41, consulted me July 24th, 1908, giving the following history: Fifteen years ago, while out hunting, he was struck in the right eye by a bird shot. The eyeball became very much inflamed and painful and the sight was lost. After four or five months of treatment the eye became quiet. At intervals, during the years that followed, the eyeball became very much inflamed and painful, but always quieted down after three or four weeks of treatment. He has been repeatedly urged by various oculists to have the eyeball enucleated, but he refuses because he is afraid of losing his position on the railroad.

He came to me during one of these inflammatory attacks. Vision of right eye=no light perception; vision of left eye, normal. An examination of the right eye showed clearly the wound of entrance in the sclera, ⅛ of an inch to the temporal side of the cornea. There is deep violet ciliary injection. The anterior chamber is very deep; the pupil is reduced to a pin point and the iris is bound down by adhesion. Atropin does not dilate the pupil. All the symptoms point to a chronic iridocyclitis. T-1. The patient complains of very little pain. Left eye normal. Under treatment, consisting of hot applications, atropin and aspirin, the eyeball became free from active inflammation in three weeks. He had a similar attack one year later which lasted about ten days. I again strongly urged enucleation, pointing out the very grave danger to the other eye, but he refused.

DISCUSSION.

Dr. Higbee: In speaking of a shot in the eye, I have a picture of a case of Dr. Jennings' taken about twelve years ago. I believe that it is one of the first X-ray localizations of foreign bodies in the eyeball. The patient was an engineer on the Cotton Belt. This man I saw three years afterwards and he had had no sympathetic trouble. There was a question as to whether

the shot was in the eye or not. I had pictures made from the side of the face. I had the man look straight in front for the first; up, the second, and in the third, look down. You can see the shot in all of the different positions, which determined the fact that the shot was located within the eyeball.

Dr. Post: In the early days of X-ray diagnosis I had a patient 61 years of age, who, while shooting, was struck in the face by four bird shot, three striking the lower jaw and one penetrating one of his eyes.

The X-ray pictures were not satisfactory. But as the eye, though blind, was quiet and the injury was done by shot fired from a gun which I thought diminished their chance of being germ carriers, I did not remove the wounded eye. I saw the patient several years afterwards; the blind eye was still comfortable and the other eye normal. I have never heard from him since and presume that he spent the remainder of his life in comfort, as far as his eyes were concerned. He was not only a patient but a personal friend and, without doubt, would have consulted me if he had had any further trouble.

Dr. Jennings, in closing: There are many cases on record in which a foreign body has remained in the eye for long periods of time without causing any symptoms of irritation or inflammation. This is accounted for by the setting up of a local inflammation which surrounds the foreign body with connective tissue and thus keeps it from doing any harm. But in the case reported this fortunate outcome had not occurred and there is every reason to suppose that sooner or later the second eye will be lost through sympathetic ophthalmitis.

Report of Two Cases of Conjunctivitis Vernalis.—By Dr. Julius H. Gross.

(Has been published in full in this Journal in June, 1912.)

DISCUSSION.

Dr. Higbee: I remember about a year or two ago, there was an article in Dr. Woodruff's Journal in which the author spoke of shaving off the conjunctiva. That appealed to me as a very severe operation without a reason. He spoke of having used treatments of silver and caustics without satisfactory results. The case had been a recurrent one and the thickening became so severe that he shaved the conjunctiva. His results were not

satisfactory. I have had excellent results with simply the cold application of boric solution. I find that my patients get most relief from cold applications applied as often as they need it—about every two hours. I have discarded almost everything but the cold application of boric acid.

Dr. Green: This is a very interesting subject to me and deserves free discussion. It has been my impression that some cases of spring catarrh are mistaken for trachoma. I have two cases in mind that came to me after having been treated by other oculists, and the history they gave led me to believe that the diagnosis of my predecessor in each case had been "trachoma." It seems to me that such an error ought not to be made. As Dr. Gross has pointed out, the points in diagnosis are reasonably clear and, of course, the treatment with caustics and astringents, indicated in trachoma, is contraindicated in spring catarrh.

As to treatment, bland lotions with very mild astringents associated with adrenalin and periodic iced applications have served me well as palliative measures.

Dr. Gross, in closing: I believe that these two cases must have been very characteristic cases because there seemed to be no resemblance to trachoma. It seems that there are three classes of these cases. In some only the region just around the limbus of the cornea is affected. Another type is that in which the lids are affected, and the third type is that in which both the globe and the tarsal conjunctiva are affected. They did not look at all like trachoma cases. Any one with experience with trachoma would not mistake them for trachoma. I have seen another case at the eye clinic, within the last year, that we took to be one of conjunctivitis vernalis. It looked very much like trachoma. I suggested it might be a mixed infection. The peculiar salmon color is quite characteristic and would help one to differentiate from trachoma.

These boys were very lively chaps and I had a hard time keeping them from breaking up my office, while there; they were so full of animal spirit, the little fellow especially. The larger one was fairly well, but had had trouble with his nose when small and was somewhat more delicate. The irritation made the eyes appear quite sore, but the larger one was attending school and seemed to be getting along quite well, and perhaps it was more than solicitude of the parents that brought them to the oculist than the complaints of the boys themselves. These

cases were the first cases of conjunctivitis vernalis I had ever seen, although I had seen many thousand of eye cases; at any rate, none had ever been pointed out to me. They puzzled me for a long time and after having resorted to text books I found it. I was led to report them partly on that account and partly because of the very heroic treatment advised in Noyes' text book, a writer we usually regard as very conservative.

If a patient cannot be sent to a cooler climate he can at least be kept in the shade. When this is carried out, the trouble seems to subside. Another interesting feature is that the sisters did not develop the trouble. The disease seems to be more prevalent among males than females. Statistics vary from 90 per cent. of males down to 40 per cent., so that some might hold that the percentage of the disease is larger among females.

PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

Philadelphia, Pa., October 10, 1912.

Dr. Wendell Reber in the Chair.

Dr. William Campbell Posey exhibited a young man with marked proptosis of the right eye, probably in consequence of an orbital tumor. The eye was advanced 20 mm. more than its fellow, and showed all the signs of great stasis in the orbital circulation. An incision into the orbit some months previously, with excision of some of the tissue for diagnostic purposes, gave evidence of the simple inflammatory nature of the orbital cellulitis and it was thought to have proceeded from a periostitis. Its persistence, however, despite constitutional remedies, now lead him to fear a neoplasm. X-ray and rhinological studies would follow. Dr. Posey spoke of the value of the Krönlein procedure for the removal of the growth from the apex of the orbit and said that in the former cases in which he had made use of this method, there had been practically no scarring.

Dr. Wm. Zentmayer: "In regard to the diagnosis, there was complete fixity of the globe with a palpable mass above and below. It is six months since we first saw him and it has scarcely increased; the vision also remains the same. I doubt very much

if the Krönlein operation would remove the growth. The degree of exophthalmus has no relation to the size of the growth. I think the one point in favor of involvement of the optic nerve is the man's age. There is no more difficult diagnosis in ophthalmology."

Dr. Reber: "If a small growth is situated inside the muscular cone, that of itself will produce a great deal of œdema and produce an exophthalmus out of all proportion to the size of the growth. I think this is an inflammatory growth and would say that a Krönlein is justified."

Dr. Posey: "My own view is that there is a growth inside the maxillary bone and my intention was to make a Krönlein if there was. I never get ready for any operation of this kind without having everything ready for a Krönlein operation. In all probability there is a sarcomatous growth which involves the maxillary bone giving rise to marked inflammation of all the surroundings of the bone."

Dr. Luther Peter spoke of a man of 62, who about 4 years ago had a growth removed from one of his tonsils which reocurred. Shortly after this he began to have, just as we have here, complete palsy of all the eye muscles. The X-ray showed that there was an inflammatory growth in the orbit evidently secondary to the tonsilar condition.

Dr. Posey gave the notes of an associated conjugate paralysis of the movements of both eyes to the left, which he had found in a one year old child. The condition had followed a slight fall, but was thought by Dr. Posey and Dr. McCoomb, of the Children's Hospital staff, who had seen the case with him, to be independent of this, and a small manifestation of infantile palsy.

Dr. McCoomb suggested it might be acute third nerve anterior politis.

Dr. Peter: "Associated palsy in infants is very rare. In 11 months of neurologic practice I never saw it. There must be some reason in the cortex for the condition. It may be that the fall brought about this cortical state."

Dr. Reber: "Dr. Peter's hypothesis is a possibility in Dr. Posey's case. We are teaching that the associated movements are represented more in the cortex. It seems to me there is a great deal of clinical evidence of the existence of cortical areas for associated movements."

Dr. Zentmayer: "In a case reported by Snell first upward

movement of one eye was affected; this afterward became palsy of associated movement upward."

Buphthalmos.—Dr. Wm. Zentmayer.

This specimen was removed from the eye of a colored child in the spring. Proptosis was extreme. The diameter of the cornea was 18 mm., the anterior chamber very deep. The other eye showed no involvement. He also referred to the case of another little girl who had buphthalmos of both eyes. A great deal of vitreous was lost in the operation done for relief of the disease.

The condition of uniform distension of the eyeball is one that is seen almost entirely in infants. In this case the child was three years old but the buphthalmos had been noticed only 3 months before.

In such eyes the distension is uniform. The cornea becomes large and increases in diameter. The lens is often dislocated. There are some few cases in which the process has been arrested but they usually get blind. Surgical interference is almost always unsatisfactory. Once you open the eye the vitreous comes forward and often escapes. Iridectomy has not been a very satisfactory operation. I might say I have seen five cases and two out of the five were colored children.

Dr. Posey: "I think there can be no doubt that the ætiology is a uterine one. The anterior chamber is so blocked that the eye in its growth is stretched. I think I have seen cases of buphthalmos in advanced child life, that is to say, 5 to 10 years of age, but I never saw one in adult life. I believe they all lose their sight. The next case I get I think I shall do a posterior sclerotomy first and then do an iridectomy later. In many of these cases the iris is very hard to get out. Even if you get the tip (or pupillary edge) it will do no good; you must get out the rest of the iris back in the angle of the anterior chamber. I never remember having had a case of successful iridectomy in buphthalmos. I think, however, that miotics offer a good chance for help."

Dr. Reber: "I have seen 3 cases of buphthalmos and 2 of them had very large corneæ (13 to 14 mm.). In the case of a boy (whom I have not seen for 3 years) there was then vision of 5/60. The family would not consent to operation. Another case was a bilateral one of a child of about 2 years old. In that

case there was slight coloboma of the iris. The third case was in a little girl of about 2 years old and was a unilateral one. In view of all the difficulties of iridectomy in these cases I feel that on the next one that comes under my observation I shall do Elliott's operation of trephining."

Dr. Harbridge asked if it had been observed if this condition presented itself at any particular period or did it generally begin at the time of birth?

Dr. Wendell Reber presented 3 cases illustrating the results following Elliott's trephining operation in 3 cases of glaucoma. One was in a young man of 27, who 4 years previously had had a violent blow upon the eye with consequent blindness. For 4 years the eye has been sightless but quiet. There was acute inflammatory glaucoma of two weeks duration, non-yielding to drug treatment. Trephining was done under local anæsthesia with complete relief to the symptoms.

One was a 65-year old man with typical acute inflammatory glaucoma of two weeks' duration, that had not yielded to the most comprehensive drug treatment. Vision equalled counting fingers at 3 feet. Trephining was done under local anæsthesia and 12 days after operation the vision had risen to 5/20, and the eye was perfectly quiet.

In the other case, chronic non-inflammatory glaucoma had existed for years. The eye was absolutely blind and had been for years intermittently painful and miotics had lost their effect. Trephining was done under local anæsthesia and the result as to pain has been perfect. Dr. Reber feels that the operation of trephining has much to recommend it and is impressed with the complete reduction of tension it effects, also the freedom from gross hæmorrhage after the operation, the unaltered or slightly altered pupil and the simplicity of the performance.

D. Forest Harbridge, M.D., Secretary.

ABSTRACTS FROM MEDICAL LITERATURE.

By J. F. Shoemaker, M.D.,
St. Louis, Mo.

CAUSES AND PREVENTION OF MINERS' NYSTAGMUS.

T. Lister Llewellyn (*Proceedings of the Royal Society,* April 10, 1912) made an analytical study of 400 cases of this neurosis with the object of discovering its cause and the best methods of prevention. Of the entire series forty-one cases belong to that variety of the affection in which the symptoms are absent or latent, and there is apparently no disability. In the remainder disability was manifest. In addition to the chief symptom—a rotary oscillation of the eyeballs that prevents the miner from accurately fixing anything toward which his vision is directed—giddiness was present in 308 cases, headache in 305, night blindness in 262, and photophobia in 159. The disease is one of extreme complexity, in which many factors are at work. The chief factor is strain caused by deficient light. Errors of refraction, deficiency of retinal pigment, position assumed at work, accident and ill health are all factors of less importance. As the result of working for long periods in the comparative darkness of the pit, the retinal cells probably lose their power of producing sufficient pigment for exact vision. This failure occurs sooner in fair, blue eyed people and in those who, owing to refractive error, are already subject to eyestrain. The more frequent occurrence of nystagmus in winter, the loss of visual acuity, and the photophobia, are all in favor of this theory. The most important preventive measure is improvement in the lighting power of the miners lamp. Shades should always be fitted to the lamps to be used in going to and from the coal face. No man with error of refraction should be allowed to work under ground. Improvement of ventilation is also of great importance, since the light given by a lamp falls off very rapidly as the oxygen percentage of the air diminishes.—*N. Y. Med. Jour.*

THE EYES IN TABES.

E. Fuchs (*Wiener Klinische Woch.,* April 4, 1912) says that if the ocular symptoms of tabes show marked fluctuations and

changes, they are probably the work of the syphilis itself and hence the prospects of benefit from specific treatment are more encouraging than when the disturbances are due to a parasyphilitic affection—this is beyond the reach of our therapeutics to date. Myosis and reflex rigidity of the pupils speak for tabes, while total rigidity of the pupils or dilatation of the pupil with paralysis of the accommodation apparatus are more likely to be signs of syphilis and hence indicate specific treatment. Simple atrophy of the optic nerve is very frequent with tabes while it is exceptional with syphilis. With tabes the papilla is blanched from the first, while in true syphilis the blanching comes on gradually after the visual disturbances are installed. This opposite course is due to the fact that the trouble in true syphilis is a descending atrophy, generally secondary to syphilitic basal meningitis. The papilla also looks different in this case, showing signs of the inflammatory origin of the atrophy. Benefit from measures addressed to the syphilis differentiate the disturbances as of direct syphilitic origin. The ophthalmologist frequently is the first to discover the tabes. Fuchs adds to the above that tabes develops only in patients whose syphilis ran a mild course; those who have frequent recurrences of symptoms from their syphilis escape tabes. Signs of syphilitic iritis or perforation of the palate are practically never found in the tabetic. Fuchs adds that reflex rigidity of the pupils is one of the earliest and most frequent symptoms of tabes and likewise in many cases of progressive paralysis. The symptom may precede the ataxia by ten or fifteen years. Its special value lies in the fact that it is only exceptionally encountered in other nervous affections. He warns that this symptom may be deceptively simulated by conditions during recovery from ordinary peripheral oculomotor paralysis, but in this case the symptom subsides as recovery progresses.—*Jr. A. M. A.*

SOME QUESTIONS CONCERNING THE METHOD OF DEVELOPMENT AND THE PATHOLOGY OF THE RETINITIS OF BRIGHT'S DISEASE.

N. M. Semple (*Trans. Am. Oph. Soc.*, 1911) says "there still exists, among authorities, a decided diversity of opinions regarding certain questions not only of pathology, but also of the method of development of that form of retinitis which is classified, in a general way, as the retinitis of Bright's disease."

While it formerly was believed that the kidney was the organ chiefly affected in cases where the so-called "albuminuric retinitis" was prone to develop, it is now known that the liver may be badly diseased in such cases and the kidneys show no evidences of injury at all, as has been demonstrated in certain cases where retinitis occurred during pregnancy. He refers to a case reported by Posey and Hirst which showed constitutional evidences of toxemia together with extensive retinitis, but where the urine was normal and there were no clinical signs of the kidneys being involved. Complete recovery of vision followed an early abortion. Semple also reports a case of his own in which the vision of the left eye was completely lost during her first pregnancy. Two subsequent pregnancies went to full term with no involvement of the retina of either eye, but during the fourth pregnancy the right eye became involved and the vision of this eye was practically destroyed. The most careful examinations of the urine, both before and for months after artificial delivery was produced, showed no signs of any trouble in the kidneys. These cases and other clinical evidence seem to show that the cause of this form of retinitis is the same deleterious substance which acts on the kidney and the liver, and that these different tissues may be attacked simultaneously, or the one following the other, depending on the resistance of the individual organ.

The author has made histological examinations of eyes affected with this disease and found, corresponding to the white areas as seen with the ophthalmoscope, masses of exudate, chiefly in the outer reticular layer, which reacted to the different stains quite characteristically, "giving a definite picture of fibrin in various stages of metamorphosis into hyaline." He says: "These stages, in addition to the appearance of a general wide-spread œdema, may be divided into three: First, a distinct network of fibrin, showing the characteristic reaction to Weigert's anilin-gentian-violet stain. Second, the masses here have lost the fine fibrillar appearance, no longer giving the reaction to the gentian-violet stain. The lines of the former fibrin network begin to coalesce into a more or less solid mass. In the third stage we find the masses have lost all fibrillar appearance, and show distinctly the properties, both chemical and as regards their reaction to the anilin stains, of hyalin." Unlike Leber, he found no fat nor any signs of fatty degeneration of the supporting fibres of Mueller. As his cases were all of short duration, he thinks this may be the explanation, as the longer the disease lasts the more degen-

erative changes take place with possibly the eventual formation of fat.

He refers to his previous description of certain changes in the ganglion cells of the ganglion-cell layer whereby these ganglion cells are displaced and are found in the nerve-fibre layer. Certain writers having declared that these masses of ganglion-cell-like bodies were not ganglion cells but varicosities of the axis-cylinder processes, he adduces evidence to show the contrary and that these cells have been crowded out of their normal position to the places where they are found. He still maintains that the retinal disease is not dependent upon the changes that have taken place in the retinal vessels, but that at least in some cases there is pronounced disease of the retina in Bright's disease where the retinal and choroidal vessels are practically normal. The author says in conclusion: "The most reasonable explanation, then, for the development of the disease in the retina is that the toxins of the blood act as the direct offending agent, and this before affecting the vessels to an extent histologically demonstrable."

NOTE ON GLAUCOMA.

Leonard Hill (*Lancet, January* 27, 1912) believes that the increased tension in glaucoma is primarily due to altered metabolism, produced by bacterial toxines or otherwise, which brings about chemical changes in the colloids of the eye, causing them to swell by the absorption of more water. Sclerotic changes, producing an obstruction of the venous and aqueous outflow, with lack of oxygen and the production of acid, may be a cause. The swelling caused by an acid is decidedly lessened by the presence of any salt and the injection beneath the conjunctiva of one-eighth to one-sixth molecular (4.05 to 5.41 per cent.) solutions of chemically pure sodium citrate is entirely harmless and promptly reduces the intraocular tension in cases of glaucoma. The fall in the intraocular tension is noticeable within ten minutes and lasts for from three to six days with the relief of all symptoms. Increased swelling of certain tissues within the eye must be balanced by decrease in the volume of blood in it since the walls of the eyeball cannot be distended. This brings about an increased pressure in the capillaries and veins of the eyeball. Hence, the tension of the eyeball is the capillary venous pressure in the eye. Since the production of increased flow of tissue lymph by incisions and similar means is the best treatment

in any condition of disordered metabolism, so in glaucoma that operation which brings about the freest circulation of blood and aqueous fluid is the most successful one.

VERNAL CATARRH IN TRACHOMA, AND FAMILY VERNAL CATARRH.

M. Meyerhof (*Klin. Monatsblätter für Augenheilkunde,* June, 1912) states that trachoma and vernal catarrh have been found to exist at the same time in the same eye and have been demonstrated both clinically and anatomically. This makes the diagnosis difficult. He believes vernal catarrh to be hereditary.

TREATMENT OF DETACHMENT OF RETINA.

Schmidt-Rimpler (*Arch. für Ophthalmologie,* March, 1912) reports the following results obtained from aspiration of the subretinal fluid and injection into the vitreous, in twenty cases of detachment of the retina where other treatment had been of no value. One proved to be a case of sarcoma of the chorioid. The other nineteen patients were under subsequent observation for at least a year, and of these eight were treated with injection of subretinal fluid, five with injection of a mixture of subretinal fluid and an eight per cent. solution of salt, and six with injection of an eight per cent. solution of salt into the vitreous. In eight cases, four of the first, three of the second, and one of the third group, a material and apparently permanent improvement followed, with reattachment of the retina, enlargement of the field and betterment of vision; in four cases there was a slight improvement; in three no improvement; and in four the condition was made worse. In six cases the operation was followed by inflammatory reaction, more or less severe, yet the improvement was marked in five of them.

VERMICULAR CONTRACTIONS OF THE SPHINCTER PUPILLÆ.

K. Muench (*Klin. Monatsblätter für Augenheilkunde,* June, 1912) says that the sphincter pupillæ has from seventy to eighty physiological segments, each of which is supplied by a nerve twig. These segments are in a certain way independent, each being stimulated from its own nerve supply, and yet they are all intimately connected. With moderate dilatation of the pupil, weak light, and adapted retina, the pupillary movements have a

decided peristaltic character, the contraction of the sphincter being only apparently uniform, i.e., simultaneous in all its segments. The rapidity of the contraction following stimulation with strong light makes the contraction apparently uniform.

AQUEOUS SOLUTION OF IODIN IN THE TREATMENT OF ULCER OF THE CORNEA.

E. L. Meierhof (*Jour. A. M. A.*, August 26, 1911) has found an aqueous solution of iodin (iodin 1 grain, sodium iodid 3 grains and 1 ounce of water) a most effective remedy in the treatment of corneal ulcers. He has this solution instilled into the conjunctival sac three or four times daily, and finds that the pain produced by the instillation is not severe and does not last long. Usually after the remedy has been employed a few days the eye becomes much less painful and sensitive to light and the headache, a common symptom in this trouble, disappears. The drops may be used several weeks, even after the ulcer has healed, causing no unpleasant symptoms unless it be some congestion of the conjunctiva which rapidly subsides when the remedy is discontinued.

BOOK REVIEWS

DAS AUGE UND DIE BRILLE (The Eye and the Spectacles). By Dr. M. von Rohr. With 84 illustrations in the text and one plate. B. G. Teubner, Leipzig, 1912. Price, 1 mark 25.

A monograph by this well known author, one of the highest authorities on everything concerning spectacles, is sure to be of the best. In clear and concise language it treats at first of the eye as an optical system, its refraction and accommodation. The larger part of the little book is devoted to the many forms of correcting spectacles, explaining their action and practical application, and their value in the different forms of errors of accommodation and refraction, and treats this interesting subject in an admirable manner.

THE HUNTERIAN LECTURES ON COLOR-VISION AND COLOR-BLINDNESS. By F. W. Edridge-Green. New York, 1912. Paul B. Haeber. Price, $1.50.

This is the American edition of the English publication which we have had occasion to recommend to our readers in a previous number of this Journal.

ATLAS ZUR ENTWICKELUNGSGESCHICHTE DES MENSCHLICHEN AUGES. (Atlas on the Development of the Human Eye.) By L. Bach and R. Seefelder. Second number, with 30 test figures and plates XVI to XXXIV. Leipzig: Wilhelm Engelmann, 1912. Price, 36 marks.

The second number of this magnificent atlas is in every respect equal to the first number. Although one of the authors, Professor Ludwig Bach, has died since the first number appeared, part of the present volume is still his work. The main subjects of this second number are the development of the cornea, iris and ciliary body. This atlas should be in the hands of every student.

EYE, EAR, NOSE AND THROAT (Practical Medicine Series). By C. A. Wood, A. H. Andrews and G. T. Head. Chicago, 1912. The Year Book Publishers. Price, $1.25.

This volume, one of a series of ten published on the different branches of medicine and chiefly intended for the general practitioner, like its predecessors, gives a valuable résumé of the most important additions to the literature of the specialties it treats on. This makes it especially valuable to the general practitioner who wants to inform himself on the progress in special branches.

OPHTHALMIC SURGERY. By J. Meller. Edited by W. A. Sweet. Second Edition; with 173 original illustrations. Philadelphia, 1912. P. Blakiston's Son & Co. Price, $3.50.

We have had occasion to recommend this excellent and practical treatise to our readers when the first edition was published. In this new edition the text has been rewritten and the subject matter rearranged. New methods of operating which have lately come into use are added, as well as some new illustrations. Thus the second edition is even more valuable than the first one.

STUDIES IN CLINICAL MEDICINE. By C. O. Hawthorne. London, 1912. John Bale, Sons & Danielsson. Price, 6 shillings.

The value of this interesting volume for the ophthalmologist lies in the description of the ocular symptoms in brain tumor, anæmia, diabetes and other general affections. The book is made up of essays and lectures, many of which have previously appeared in print. They show the author to be a thorough clinician and cannot fail to be perused with great pleasure and profit.

EIN WEITERER BEITRAG ZUR GLAUCOM-FRAGE. (A further Contribution to the Glaucoma Question.) By W. Wagner. Berlin, 1912. S. Karger. Price, 1.50 mark.

The author, after giving the interesting history of his own affliction with glaucoma, goes into a general discussion of glaucoma, which contains nothing new and does not take into account much that has been learned in more recent years concerning this disease. Finally he asserts that in his experience the only safe and sure operation in glaucoma cases is an iridectomy carefully performed. This monograph is marred by a large number of almost unpardonable misprints, for instance options for opticus, corpus ostiare for ciliare, etc.

THE OCULAR MUSCLES: A practical hand-book on the muscular anomalies of the eye. By H. F. Hansell and W. Reber. With 3 Plates and 82 other illustrations. Second edition, rewritten and enlarged. Philadelphia: P. Blakiston's Son & Co., 1912.

In its second edition this well-known practical hand-book has assumed a considerably larger size, due to many and valuable additions. It is one of the books which no student of this subject can afford to be without.

DIAGNOSTIK DER FARBENSINNSTOERUNGEN. (Diagnosis of disturbances of the color sense). By Professor Dr. Stargardt and Professor Oloff. Berlin, 1912. Julius Springer. Price, 1 mark 80.

In this booklet the authors address themselves especially to sanitary officers, official physicians, railroad physicians and students. Having described the function of the normal color sense and the theories of color perception, the disturbances, whether congenital or acquired, are detailed. The main chapter gives the diagnosis of disturbances of the color sense by the different methods in use, with critical remarks on the latter founded on an experience of many years. This is the most interesting part of the little work and of great practical value.

THE BLOOD OF THE FATHERS. A play in four acts. By G. F. Lydston. Chicago: The Riverton Press, 1912.

The versatile author of this play intends to help the present movement of eugenics by a forcible presentation of what the blood of the fathers may bring forth in the children. He undoubtedly succeeds, although in so good a cause we have to forgive him some exaggeration. ALT.